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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,352	11/14/2001	Miyuki Kunimatsu	HITA.0121	6939

7590 07/07/2003

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EXAMINER

HON, SOW FUN

ART UNIT	PAPER NUMBER
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1772

DATE MAILED: 07/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/987,352

Applicant(s)

KUNIMATSU ET AL.

Examiner

Sow-Fun Hon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to because the adhesive labels on the top right corners of the drawings should not be there. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The abstract of the disclosure is objected to because it is longer than 150 words.

Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

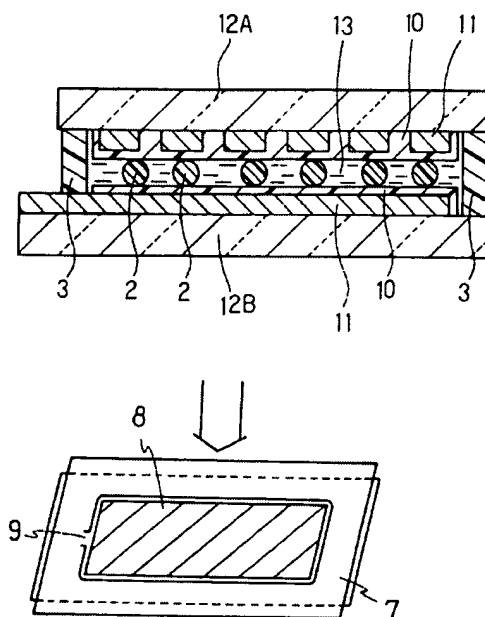
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (US 5,898,041) in view of Morozumi (US 5,771,084).

Yamada et al. has a liquid crystal display device comprising a liquid crystal panel in which a lower substrate 12A having transparent pixel electrodes 11 on its inside surface and an upper substrate 12B disposed in opposition to each other with a layer of liquid crystal compound 13 being interposed there between, and the lower and the upper substrate are stuck to each other by a sealing material 3 which is arranged to surround a display area of the upper substrate and has, in portion, a cut 9 which serves as a liquid crystal injecting port, the liquid crystal injecting port being sealed with an end-sealing material after a liquid crystal compound has been injected through the liquid crystal injecting port (column 12, lines 10-35 and column 11, lines 1-20). The embodiment below should be viewed upside down.



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Yamada et al. teaches that the sealing material comprises a (epoxy)(meth)acrylate group oligomer, a (meth)acrylic group containing monomer from a list of (metha)crylates such as 2-hydroxy propyl (metha)crylate and pentaerythritol tri(meth)acrylate. The photocrosslinked reaction (optical) initiator includes acetophenone type ultraviolet cure (optical) initiators such as 2,2-dimethoxy-2-phenyl acetone (column 16, lines 5-50) which is a homolog of 2,2-dimethoxy-2-phenyl acetophenone, Applicant's chemical formula (i) where there is an extra phenyl group on the acetone segment. $R_1=R_2=R_3=H$. The sealant material is heated and aged (annealed) at 120 °C for 12 hours (column 17, lines 25-35).

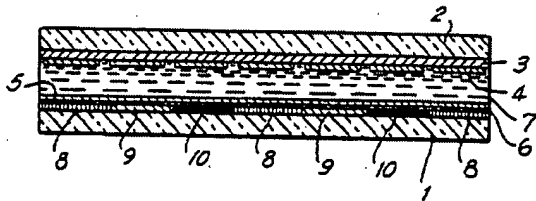
Since Yamada et al. teaches that the preferred components do not have interaction with the liquid crystal (column 10, lines 20-50) and that discharge of the sealing material into the liquid crystal is prevented, inferring zero mixing, if the curing ratio of the sealing material after the ultraviolet curing is at least 50 to 60 % (column 5, lines 25-40) with an accumulated light quantity (irradiation energy) of 4,800 mJ/(cm²) (column 17, lines 15-30), in the absence of clear comparative data, it is the examiner's position that the amount of constituent components of the end-sealing material which exist as impurities in the liquid crystal compound is 1.0/10,000 or less of the total peak area value of the liquid crystal compound that is measured by gas chromatography/mass spectrometry.

Yamada et al., however fails to disclose that the transparent pixel electrodes 4 are accompanied by thin film transistors for switching for pixel selection, or color filters in the display panel which is well known for color liquid crystal displays.

Morozumi has a multi-color liquid crystal display comprising a liquid crystal display panel in which a lower substrate 2 having thin film transistors for switching for pixel selection

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(switching element layer 3 and transparent pixel electrodes 4) on its inside surface and an upper substrate 1 having color filters 8, 9, 10 for plural colors red, green and blue on its inside surface are disposed in opposition to each other with a layer of liquid crystal compound 7 being interposed there between, and the lower substrate and the upper substrate are stuck to each other by a sealing material (sealing around the periphery of the substrates) (column 3, lines 1-25 and column 4, lines 15-35). The embodiment below should be viewed upside down.



Therefore Morozumi demonstrates that it would have been obvious to one of ordinary skill in the art to accompany the transparent pixel electrodes with thin film transistor switching elements, and color filters with plural colors on the substrate surface opposing the substrate surface with the switching elements in the invention of Yamada et al. in order to obtain a multi-color liquid crystal display device, and a method of making it.

6. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. in view of Morozumi as applied to claim 1 above, and further in view of Woods et al. (US 4,668,713).

Yamada et al. has been discussed above and teaches a liquid crystal display device comprising a liquid crystal panel in which a lower substrate having transparent pixel electrodes on its inside surface and an upper substrate disposed in opposition to each other with a layer of liquid crystal compound being interposed there between, and the lower and the upper substrate are stuck to each other by a sealing material which is arranged to surround a display area of the

upper substrate and has, in portion, a cut which serves as a liquid crystal injecting port, the liquid crystal injecting port being sealed with an end-sealing material after a liquid crystal compound has been injected through the liquid crystal injecting port.

Yamada et al. teaches that the sealing material comprises a (meth)acrylate group oligomer, a (meth)acrylic group containing monomer and an acetophenone type ultraviolet cure initiator such as 2,2-dimethoxy-2-phenyl acetone, which is a homolog of 2,2-dimethoxy-2-phenyl acetophenone.

Yamada et al. fails to teach the presence of a phenolic antioxidant in the sealing material.

Woods et al. teaches sealing (sealant) material for electronic components (column 1, lines 1-20). The photoinitiators are the free radical ones well known for use in ultraviolet (UV-) curable systems such as the acetophenone types. Woods et al. teaches that the phenolic antioxidant (free radical stabilizer or inhibitor) is present to prevent premature offset of curing such as the hydroquinones or 2,6-Di-t-butyl-p-cresol (2,6-di-tert-butyl-4-methyl phenol) (column 6, lines 25-60). Since sunlight comprises ultraviolet light, it would have been obvious to one of ordinary skill in the art to have used the specific phenolic antioxidants taught by Woods et al. to prevent sunlight caused premature offset of curing of the ultraviolet curable sealing material in the invention of Yamada et al. in order to obtain a liquid crystal display device with a well-sealed liquid crystal cell containing pure liquid crystal, and a method of making it.

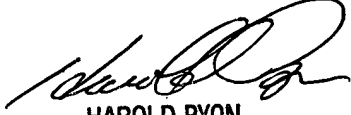
Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number is (703)308-3265. The examiner can normally be reached Monday to Friday from 9:00 AM to 6:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (703)308-4251. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

874
Sow-Fun Hon
06/26/03


HAROLD PYON
SUPERVISORY PATENT EXAMINER

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6/30/03